

REMARKS

Claims 29-31 are cancelled, new claims 49 and 50 are added, and claims 26-27, 32-34, 37-39, 41, 46 and 48 are amended through this Amendment and Response. Thus, claims 26-28 and 32-50 are pending in the present application. The Applicant has carefully and thoughtfully considered the Office Action and the comments therein. Each of the pending claims is believed to define an invention that is novel and unobvious over the cited references. Based on the following remarks, it is respectfully submitted that the instant application is in condition for allowance. Prompt reconsideration and withdrawal of the rejections is earnestly requested.

Claim Amendments

Amendment to claim 26 is supported by on page 2, line 21 to page 3, line 3 and page 8, lines 1-2 of the disclosure, as well as original claims 29 and 30, now cancelled. New claim 49 is supported by the description on page 9, lines 3-5. Accordingly, no new matter has been added.

Information Disclosure Statement

On page 2 of the Office Action, the IDS of September 2, 2005 was objected to as failing to comply with the requirements of 37 CFR § 1.98. Specifically, the Action states that the IDS should include a legible copy of each foreign patent. A new IDS was filed on July 19, 2007, including full copies of the cited documents. Reconsideration of the IDS is respectfully requested.

Oath/Declaration

On page 2 of the Office Action, the declaration was rejected as defective. A new declaration is being submitted with this filing. Reconsideration of the declaration is respectfully requested.

Specification

On page 3 of the Office Action, the disclosure is objected to because of an informality. Applicants thank the Examiner for carefully considering the application and pointing out this informality. The second full paragraph on page 6, continuing onto page 7, of the disclosure has been amended to over this objection.

Claim Objections

On page 3 of the Office Action, claims 26, 29, 33, 34, 37, 45 and 48 are objected to for minor informalities. Applicants thank the Examiner for pointing out the informalities. These claims have been amended to overcome the objections.

Rejections under 35 U.S.C. § 102

On page 4 of the Office Action, claims 26, 29, 31-34 and 45 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,625,189 to McCaul *et al.* (“McCaul”). Independent claim 26 has been amended herein and is believed to be allowable over McCaul. Reconsideration of claims 26, 29, 31-34 and 45 and allowance thereof is respectfully requested.

McCaul fails to teach several features of claim 26, as amended. For example, the amended claim 26 recites “a second surface including at least two reflective regions arranged along the optical path to reflect light between a respective one of the at least two reflective surfaces and the first planar surface.” This feature is not taught or suggested by McCaul. In fact, this feature was originally recited in claim 30, which is not rejected in the Office Action as being anticipated by McCaul. Thus, claim 26, as amended, is submitted as allowable over McCaul.

Claims 29, 31-34 and 45 are dependent on claim 26 and are submitted as allowable over McCaul for at least the same reasons.

Rejections under 35 U.S.C. § 103

On pages 5-11 of the Office Action, claims 26, 29-34, and 36-48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,973,326 to Parry *et al.* (“Parry”) in view of U.S. Patent No. 5,384,640 to Wong (“Wong”). This rejection is respectfully traversed. Specifically, it is submitted that the combination of Parry and Wong fail to teach each and every element of the independent claim 26 and, accordingly, fail to establish a *prima facie* case for obviousness under 35 U.S.C. § 103(a). Further, it is submitted that there is no motivation for one of ordinary skill in the art to implement the Wong’s teachings to modify Parry in the manner suggested in the Action.

Claim 26 has been amended to recite “an optical source arranged in the chamber to provide **radiation having a predetermined directional range** along an optical path within the chamber, **the radiation being emitted at a narrow solid angle at near normal incidence**” (emphasis added). This feature is not taught or suggested by either Parry or Wong, individually or in combination. Thus, it is respectfully submitted that for at least this reason, the claim 26 is allowable over the cited art.

Parry teaches an optical source 5 which emits an omnidirectional infra-red radiation. *Parry, Col. 3: 41-44.* Most of the radiation is then reflected from a ellipsoidal reflective surface 7, incident on the surface 3, onto the focused region 9 between the source 5 and the sensor 6. *Parry, Col. 3: 44-49.* Accordingly, the radiations emitted from the source 5 do not have a predetermined directional range. In fact, the radiation is emitted in all directions and the best that the reflective surface 7 can do is to reflect most of the rays so as to enter the focused region 9.

On page 6, the Action in fact concedes that Parry “lacks an explicit description that the source is arranged to emit light in a predetermined directional range.” Nonetheless, the Action suggests in the sentence bridging the bottom of page 6 and the top of page 7 that claim 26 is obvious over Parry, alleging that Col. 1, lines 55-57 of Parry discloses that any source or detector may be used. Applicants respectfully disagree. Col. 1, lines 55-57 of Parry state as follows:

The optical source is preferably an ***infra-red source but sources and sensors operating in other parts of the optical spectrum may be used*** in other embodiments (emphasis added).

Thus, Parry merely suggests using alternatives forms of radiation to infra-red in the source 5 and sensor 6. However, Parry's source 5 is omnidirectional and Parry does not suggest using an alternative embodiment in which the source 5 is not omnidirectional. Parry's aforementioned paragraph cannot be construed so broadly as to teach or suggest any type of source and sensor. Parry merely suggests using other forms of radiation within the optical spectrum to be used in conjunction with the source 5 and sensor 6..

In fact, a disadvantage to Parry's gas monitor is that the source 5 is omnidirectional, so the part-ellipsoidal surfaces 7, 8 would have to be large enough such that the surface 7 can reflect a substantial portion of the radiation being emitted from the source 5 onto the same point on the reflective section 9. *Parry Col. 3, line 64 to Col. 4, line 17.* Similarly, the surface 8 has to be large enough to reflect a substantial portion of the radiation reflected from the reflective section 9 onto the sensor 6. *Parry, Col. 4, lines 18-35.* However, since the surfaces 7, 8 are designed in such way, one of ordinary skill in the art would have no motivation to use an optical source or detector that is not omnidirectional. Thus, one of ordinary skill in the art would have no motivation to even try a source that provides "radiation having a predetermined directional range ... at a narrow solid angle at near normal incidence," or a detector that detects "radiation only from the predetermined directional range at a narrow solid angle at near normal incidence to the detector," as recited in claim 26. Therefore, Parry's teachings fail to render claim 26 obvious.

On page 7 of the Action, the Action also rejects claim 26 as obvious over Parry in view of Wong, alleging that Col. 3, lines 10-16 of Wong teaches a source for a gas sensor that is "a semiconductor laser having a predetermined solid angle substantially centered on an axis of the laser." Applicants respectfully disagree.

Wong does not teach a source that provides radiation "at a narrow solid angle," as recited in claim 1. Although the semiconductor laser 12 of Wong is emitted in a diverging beam, the beam has an cross section 20 of "substantially elongated shape." The maximum divergence of the beam is indicated by the rays 22 and 24 in FIG. 1. It is clear from FIG. 1 that rays 22 and 24 in FIG. 1 are not arranged at a narrow solid angle. In fact, the rays 22, 24 appear to be close to perpendicular to one another. Such emitter would render the invention of claim 1 inoperable, since optical path of the radiation emitted from such emitter would not have a narrow solid angle

such that the reflective surface 9 including an ellipsoidal surface could be arranged along the entire optical path. The present claim, however, recites a reflective surfaces including an ellipsoidal surface arranged along the optical path to reflect light. Thus, the semiconductor laser 12 of Wong would render the present claim inoperable.

Also, Wong does not teach “a detector operative to detect radiation only from the predetermined directional range at a narrow solid angle at near normal incidence to the detector,” as recited in claim 26. There is no indication in Wong that the detector 34, as shown in either of FIGs. 2 (prior art) or 3, is arranged to detect only the predetermined directional range. In fact, FIG. 3 of Wong appears to show that radiations can be detected from any direction, as long as they are received at the detector 34. Further, even the detector 34 of FIG. 2 of Wong does not appear to receive radiation at a narrow solid angle. Finally, there is no indication that the detector 34 of Wong receives ONLY radiations from the predetermined directional range. In other words, there is no indication that other radiations outside of the predetermined directional range are received at the detector 34, but are not detected. Thus, it is respectfully submitted that Wong fails to cure the deficiencies of Parry in teaching the elements of claim 26.

Further, as previously stated, there is no motivation for one of ordinary skill to modify Parry’s system to use an optical source or detector that is not omnidirectional. Otherwise, the ellipsoidal reflective regions 7 and 8 of Parry that extend from the top reflective surface 3 to the bottom reflective surface 9 would be futile. Thus, even if, *arguendo*, Wong’s semiconductor laser 12 could have been aligned with the claimed source, there would still be no motivation for one or ordinary skill in the art to use Wong’s semiconductor laser 12 in the gas monitor of Parry. In fact, one would not even have a motivation to try to combine these two references.

Accordingly, it is respectfully submitted that claim 26 is patentably distinct over Parry in view of Wong. Withdrawal of the rejection of claim 26 and allowance thereof is respectfully requested.

Claims 32-34 and 36-48 are dependent on claim 26 and are submitted as allowable over the cited art for at least the same reasons. Withdrawal of the rejections of claims 32-34 and 36-48 and allowance thereof is respectfully requested.

On page 11 of the Office Action, claims 27 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Parry in view of Wong, and further in view of U.S. Patent No. 4,024,397 to Weiner (“Weiner”). Applicants respectfully disagree and traverse this rejection. Weiner fails to cure the deficiencies of Parry and Wong in teaching the aforementioned limitations as discussed with respect to claim 26. In fact, Weiner is only relied on in the Action for its alleged teachings of selecting a range of angles of acceptance. Thus, it is respectfully submitted that claims 27 and 28 are allowable over the cited art. Withdrawal of the rejections of claims 27 and 28 and allowance thereof is respectfully requested.

On pages 11-12 of the Office Action, claim 35 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Parry in view of Wong, and further in view of U.S. Patent No. 5,384,640 to Wilkins et al. (“Wilkins”). Applicants respectfully disagree and traverse this rejection. Wilkins fails to cure the deficiencies of Parry and Wong in teaching the aforementioned limitations as discussed with respect to claim 26. In fact, Wilkins is only relied on in the Action for its alleged teachings of gas admittance means including sintered material. Thus, it is respectfully submitted that claim 35 is allowable over the cited art. Withdrawal of the rejection of claim 35 and allowance thereof is respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

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Respectfully submitted,

By Robert Kinberg
Robert Kinberg
Registration No.: 26,924
VENABLE LLP
P.O. Box 34385
Washington, DC 20043-9998
(202) 344-4000
(202) 344-8300 (Fax)
Attorney/Agent For Applicant

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